

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 18 August 2000 (18.08.00)	
International application No. PCT/KR99/00838	Applicant's or agent's file reference FPE99005-PCT
International filing date (day/month/year) 30 December 1999 (30.12.99)	Priority date (day/month/year) 08 January 1999 (08.01.99)
Applicant ROH, Young, Hoon	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 27 July 2000 (27.07.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Juan Cruz Telephone No.: (41-22) 338.83.38
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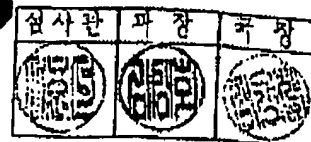
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference PPE99/005-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/KR99/00838	International filing date (day/month/year) 30 DECEMBER 1999 (30.12.1999)	Priority date (day/month/year) 08 JANUARY 1999 (08.01.1999)
International Patent Classification (IPC) or national classification and IPC IPC7 C11B 20/04		
Applicant EASY SOFTEC CO., LTD. et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 27 JULY 2000 (27.07.2000)	Date of completion of this report 08 JUNE 2001 (08.06.2001)
Name and mailing address of the IPRA/KR Korean Intellectual Property Office Government Complex-Daejeon, Dunsan-dong, Seo-gu, Daejeon Metropolitan City 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer SEO, Hawthorne Telephone No. 82-42-481-5697

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01- 6-29:17:44 : LEE INTERNATIONAL

2 / 3

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR99/00838

1. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement) under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet _____

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed," and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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INTERNATIONAL PRELIMINARY EXAMINATION

International application No.

PCT/KR99/00838

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-2</u>	YES
	Claims _____	NO
Inventive step (IS)	Claims <u>1-2</u>	YES
	Claims _____	NO
Industrial applicability (IA)	Claims <u>1-2</u>	YES
	Claims _____	NO

2. Citations and explanations (Rule 70.7)

The subject matter of present claim 1 differ therefrom in that caption function is added to MP3 data format, and this teaching is not rendered obvious from the prior art.

Thus the novelty of the subject matter claimed can be acknowledged, and also the subject matter of the claim 1 appears to involve an intensive step in the sence of ART 33(3)PCT as well.

The industrial applicability of said subject-matters is self-evident.

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PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum)

FPE99005-PCT

Box No. I	TITLE OF INVENTION MP3 PLAYER HAVING A CAPTION DISPLAY FUNCTION, MP3 DATA FORMAT AND REPRODUCING METHOD THEREOF	
Box No. II	APPLICANT	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)		<input type="checkbox"/> This person is also inventor. Telephone No. 82-2-508-1605 Facsimile No. 82-2-562-9768 Teleprinter No.
EASY SOFTEC CO., LTD. 3rd Floor, Sunghyun Building, 649-6, Yoksam-Dong, Kangnam-Ku, Seoul 135-080, Republic of Korea		
State (that is, country) of nationality: KR		State (that is, country) of residence: KR
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box		
Box No. III	FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)		This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.)
ROH, Young Hoon #201 Saeseoul Apartment, 46, Banpo-Dong, Seocho-Ku, Seoul 137-040, Republic of Korea		
State (that is, country) of nationality: KR		State (that is, country) of residence: KR
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box		
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.		
Box No. IV	AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)		Telephone No. 82-2-2279-3631 Facsimile No. 82-2-2273-4605 Teleprinter No.
KIM, Seong Taik 148-28 Ulchiro 2-Ka, Chung-Ku, Seoul 100-192, Republic of Korea		
<input type="checkbox"/> Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.		

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Sheet No. 2

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☐ **AF** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☐ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☐ **EP** European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☐ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <input type="checkbox"/> AE United Arab Emirates | <input type="checkbox"/> LR Liberia |
| <input type="checkbox"/> AL Albania | <input type="checkbox"/> LS Lesotho |
| <input type="checkbox"/> AM Armenia | <input type="checkbox"/> LT Lithuania |
| <input type="checkbox"/> AT Austria | <input type="checkbox"/> LU Luxembourg |
| <input type="checkbox"/> AU Australia | <input type="checkbox"/> LV Latvia |
| <input type="checkbox"/> AZ Azerbaijan | <input type="checkbox"/> MD Republic of Moldova |
| <input type="checkbox"/> BA Bosnia and Herzegovina | <input type="checkbox"/> MG Madagascar |
| <input type="checkbox"/> BB Barbados | <input type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input type="checkbox"/> BG Bulgaria | |
| <input type="checkbox"/> BR Brazil | <input type="checkbox"/> MN Mongolia |
| <input type="checkbox"/> BY Belarus | <input type="checkbox"/> MW Malawi |
| <input type="checkbox"/> CA Canada | <input type="checkbox"/> MX Mexico |
| <input type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CN China | <input type="checkbox"/> NZ New Zealand |
| <input type="checkbox"/> CU Cuba | <input type="checkbox"/> PL Poland |
| <input type="checkbox"/> CZ Czech Republic | <input type="checkbox"/> PT Portugal |
| <input type="checkbox"/> DE Germany | <input type="checkbox"/> RO Romania |
| <input type="checkbox"/> DK Denmark | <input type="checkbox"/> RU Russian Federation |
| <input type="checkbox"/> EE Estonia | <input type="checkbox"/> SD Sudan |
| <input type="checkbox"/> ES Spain | <input type="checkbox"/> SE Sweden |
| <input type="checkbox"/> FI Finland | <input type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> GB United Kingdom | <input type="checkbox"/> SI Slovenia |
| <input type="checkbox"/> GD Grenada | <input type="checkbox"/> SK Slovakia |
| <input type="checkbox"/> GE Georgia | <input type="checkbox"/> SL Sierra Leone |
| <input type="checkbox"/> GH Ghana | <input type="checkbox"/> TJ Tajikistan |
| <input type="checkbox"/> GM Gambia | <input type="checkbox"/> TM Turkmenistan |
| <input type="checkbox"/> HR Croatia | <input type="checkbox"/> TR Turkey |
| <input type="checkbox"/> HU Hungary | <input type="checkbox"/> TT Trinidad and Tobago |
| <input type="checkbox"/> ID Indonesia | <input type="checkbox"/> UA Ukraine |
| <input type="checkbox"/> IL Israel | <input type="checkbox"/> UG Uganda |
| <input type="checkbox"/> IN India | <input checked="" type="checkbox"/> US United States of America |
| <input type="checkbox"/> IS Iceland | |
| <input checked="" type="checkbox"/> JP Japan | <input type="checkbox"/> UZ Uzbekistan |
| <input type="checkbox"/> KE Kenya | <input type="checkbox"/> VN Viet Nam |
| <input type="checkbox"/> KG Kyrgyzstan | <input type="checkbox"/> YU Yugoslavia |
| <input type="checkbox"/> KP Democratic People's Republic of Korea | <input type="checkbox"/> ZA South Africa |
| | <input type="checkbox"/> ZW Zimbabwe |
| <input type="checkbox"/> KR Republic of Korea | |
| <input type="checkbox"/> KZ Kazakhstan | |
| <input type="checkbox"/> LC Saint Lucia | |
| <input type="checkbox"/> LK Sri Lanka | |

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

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Sheet No. 3

Box No. VI PRIORITY CLAIM					<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:			
		national application: country	regional application: regional Office	international application: receiving Office	
item (1) 08 January 1999 (08. 01. 99)	1999-235	KR			
item (2)					
item (3)					
<input type="checkbox"/> The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):					
<small>* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.</small>					
Box No. VII INTERNATIONAL SEARCHING AUTHORITY					
Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):		Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):			
ISA / KR		Date (day/month/year)	Number	Country (or regional Office)	
Box No. VIII CHECK LIST; LANGUAGE OF FILING					
This international application contains the following number of sheets:		This international application is accompanied by the item(s) marked below:			
request	3	1. <input type="checkbox"/> fee calculation sheet			
description (excluding sequence listing part)	16	2. <input type="checkbox"/> separate signed power of attorney			
claims	6	3. <input type="checkbox"/> copy of general power of attorney; reference number, if any:			
abstract	1	4. <input type="checkbox"/> statement explaining lack of signature			
drawings	5	5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):			
sequence listing part of description		6. <input type="checkbox"/> translation of international application into (language):			
Total number of sheets	31	7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material			
		8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form			
		9. <input type="checkbox"/> other (specify):			
Figure of the drawings which should accompany the abstract: Figure 1		Language of filing of the international application: Korean			
Box No. IX SIGNATURE OF APPLICANT OR AGENT					
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).					
KIM, Seong Taik					

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

For International Bureau use only	
Date of receipt of the record copy by the International Bureau:	

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[별지 제 64호 서식]

PAYMENT OF FEES FOR INTERNATIONAL APPLICATION

To : Commissioner of
the Korean Industrial Property Office

International Application No.			International Filing Date			Priority Date	8. 1. 99
Applicant	Name	EASY SOFTEC CO., LTD.		Residence Reg. No.	KR	Country of Nationality	KR
	Address	3rd Floor, Sunghyun Building, 649-6, Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Republic of Korea					
Agent	Name	KIM, Seong Taik	Agent's Code	9-1998-000019-9	Tel. No.	82-2-2279-3631	
	Address	148-28, Ulchiro 2-Ka, Chung-Ku, Seoul 100-192, Republic of Korea					
Kind of Fee		<input checked="" type="checkbox"/> Transmittal Fee <input checked="" type="checkbox"/> Basic Fee <input checked="" type="checkbox"/> Designation Fee <input checked="" type="checkbox"/> Search Fee <input type="checkbox"/> Confirmation Fee					
Amount of Fee		₩ 1,147,900					

Submitted hereby is a payment of fees pursuant to Article 103 of the Enforcement Regulations of the Patent Law.

Date(day/month/year) 30 December 1999

Applicant (Agent) KIM, Seong Taik (Seal)

※ Attached Document(s) :

A copy of the certificate of payment of international application fees

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This sheet is not part of and does not count as a sheet of the international application.

PCT

FEE CALCULATION SHEET

Annex to the Request

For receiving Office use only

International application No.

Applicant's or agent's
file reference

FPE99005-PCT

Date stamp of the receiving Office

Applicant

EASY SOFTEC CO., LTD. et al.

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE 45,000 [T]
2. SEARCH FEE 150,000 [S]

International search to be carried out by KR
(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

The international application contains 31 sheets.

first 30 sheets 489,600 [b1]

1 x 11,300 = 11,300 [b2]

remaining sheets additional amount

Add amounts entered at b1 and b2 and enter total at B 500,900 [B]

Designation Fees

The international application contains 4 designations.

4 x 113,000 = 452,000 [D]

number of designation fees amount of designation fee payable (maximum 10)

Add amounts entered at B and D and enter total at I 952,900 [I]

(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT (if applicable) [P]

5. TOTAL FEES PAYABLE 1,147,900

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

TOTAL

☐ The designation fees are not paid at this time.

MODE OF PAYMENT

☐ authorization to charge
deposit account (see below)

☐ cheque

☐ postal money order

☐ bank draft

☒ cash

☐ revenue stamps

☐ coupons

☐ other (specify):

DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)

The R/O ☐ is hereby authorized to charge the total fees indicated above to my deposit account.

☐ (this check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

☐ is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.

Deposit Account No.

Date (day/month/year)

Signature

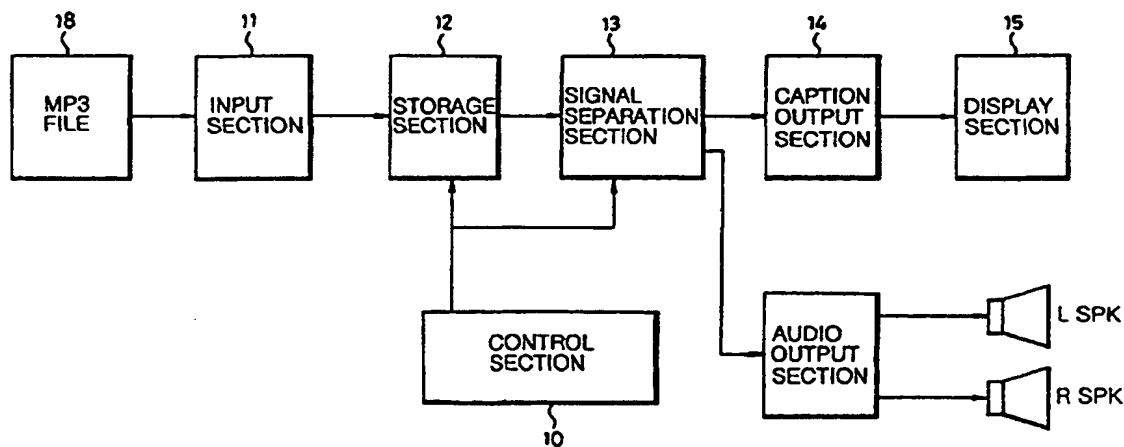
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : G11B 20/04	A1	(11) International Publication Number: WO 00/41175 (43) International Publication Date: 13 July 2000 (13.07.00)
(21) International Application Number: PCT/KR99/00838 (22) International Filing Date: 30 December 1999 (30.12.99) (30) Priority Data: 1999/235 8 January 1999 (08.01.99) KR (71) Applicant (for all designated States except US): EASY SOFTEC CO., LTD. [KR/KR]; 3rd floor, Sunghyun Building, 649-6, Yoksam-Dong, Kangnam-Ku, Seoul 135-080 (KR). (72) Inventor; and (75) Inventor/Applicant (for US only): ROH, Young, Hoon [KR/KR]; #201 Saeseoul Apartment, 46, Banpo-Dong, Seocho-Ku, Seoul 137-040 (KR). (74) Agent: KIM, Seong, Taik; 148-28, Ulchiro 2-Ka, Chung-Ku, Seoul 100-192 (KR).		(81) Designated States: CN, GB, JP, US. Published <i>With international search report.</i> <i>In English translation (filed in Korean).</i>

(54) Title: CAPTION MP3 PLAYER HAVING A CAPTION DISPLAY FUNCTION, CAPTION MP3 DATA FORMAT AND METHOD OF REPRODUCING CAPTION MP3 DATA

**(57) Abstract**

A caption MP3 player having a caption display function of displaying caption information in synchronism with corresponding audio information when the audio information is outputted on stereo, a caption MP3 data format and a method of reproducing the caption MP3 data are provided. The caption MP3 player includes a storage section to which the audio information and the corresponding caption information are inputted and stored therein, a signal separation section for separating the audio information and the caption information provided from the storage section, a control section for controlling storage and output of the information through the storage section and controlling the audio and caption information separated by the signal separation section to be synchronized with each other, and a caption output section for outputting the caption information synchronized with the audio information that corresponds to the caption information and is outputted from the audio output section.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
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BF	Burkina Faso	GR	Greece			TR	Turkey
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BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakistan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

**CAPTION MP3 PLAYER HAVING A CAPTION DISPLAY FUNCTION, CAPTION
MP3 DATA FORMAT AND METHOD OF REPRODUCING CAPTION MP3 DATA**

BACKGROUND OF THE INVENTION

5 [Field of the Invention]

The present invention relates to a caption MP3 player having a caption display function, caption MP3 data format and method of reproducing caption MP3 data and in particular, to a caption MP3 player having a function of displaying caption information on a display device in synchronism with corresponding audio information while outputting the audio information on stereo, a caption MP3 data format and a method of reproducing the caption MP3 data.

[Description of the Related Art]

Generally, MP3 means MPEG (Motion Picture Expert Group) Layer-3, and belongs to the audio technology in the MPEG field. MP3 is an audio file format that is formed by compressing existing data by audio data coding without deterioration in sound quality. Such an MP3 file has an AAU (hereinafter, "audio decoding unit") recording format. In other words, the MP3 file comprises a header, cyclic redundancy check (CRC), audio information, and auxiliary data. Usually, the MP3 player playing MP3 files is used as a dedicated audio appliance for receiving compressed audio files and reproducing them in the form of audio information.

The conventional MP3 player mounts a liquid crystal display on which, in addition to the audio information, simple character data (e.g., a simple reference such as a title of a song) is displayed. However, such character data cannot synchronously display a character, i.e., the caption information, which corresponds to the audio information.

25 In the conventional caption tape type using a cassette tape, the caption information and the audio information are stored on two tracks of the tape, respectively, that is used exclusively for audio. The audio information and the caption information are outputted to the speaker and liquid crystal display, respectively, by the caption cassette player.

However, the caption tape type, in which the digital signal of the character data is converted into an analog signal and stored on the tape, has some problems when reproducing the data. The problems are that: the character signal results in noises by interrupting the audio signal; the audio signal results in an error in the character by interrupting the character signal; or the audio information is outputted on mono, not stereo, by storing the character data in one of the tracks on the tape.

To solve the problem of mono output in the caption cassette, the tape is divided into four tracks or output is achieved in the stereophonic mode by signal synthesis. However, when four tracks are used, the player should comprise a four-track head to process the data on each track. When the data is outputted in the stereophonic mode by the signal synthesis, signal loss may occur during the analysis of the signal since it is not possible to completely divide the synthesized signals. Moreover, both signals result in noises by interrupting each other when reproducing the audio information.

SUMMARY OF THE INVENTION

An object of the present invention is to provide an MP3 player having a caption information display function of storing audio information and corresponding caption information in an MP3 recording medium and reproducing the recorded data by synchronizing the data with each other, and provide an MP3 data format and a method of reproducing the MP3 data.

An MP3 file according to the present application comprises standard MP3 audio information and caption information having data to display the audio information in the form of characters, and thus is referred to hereinafter as caption MP3 data or caption MP3 file.

In the reproduction of the caption MP3 file, the audio information to be reproduced and the corresponding caption information should be synchronously outputted. For the synchronization of the audio information and the caption information, position data and time data can be used. Both or only one of the position data and the time data can be used. The position data may be that of the audio information that should be synchronized with the caption information or that of the caption information that should be synchronized with the

audio information. The time data is to indicate the display time of the caption data that should be outputted through a display device.

The caption MP3 player according to the present invention reproduces the caption MP3 data comprising audio information and corresponding caption information (the caption information including position data and/or time data), the audio information having a standard MP3 file format comprising a header, audio data and auxiliary data, the caption MP3 player comprising: a storage means for storing the audio information and the corresponding caption information inputted thereto; a signal separating means for separating the audio information and caption information inputted from the storage means; a control means for controlling the storage and output of the information through the storage means and controlling the audio signal and the corresponding caption signal, which are separated by the signal separating means, to be synchronized; a caption output means for outputting the caption signal synchronized with the audio signal, which corresponds to the caption signal and is outputted from the audio output means, by inputting the output from the signal separating means.

The caption MP3 data format according to a first embodiment of the present invention comprises an audio information and a corresponding caption information, the audio information having a standard MP3 file format with a header, audio data and auxiliary data, wherein the caption information includes position data and/or time data, and when the audio information is reproduced, the caption information synchronized with the reproduced audio information is outputted using the position data and/or the time data.

The caption MP3 data format according to a second embodiment of the present invention has a format comprising a plurality of caption MP3 files, each of the caption MP3 files having audio information and corresponding caption information, the audio information having a standard MP3 file format with a header, audio data and auxiliary data, wherein the audio information is located before the caption information in the each MP3 file, and the caption information includes caption display time data showing the time indicated in a display device when the caption information is reproduced.

According to the present invention, the caption information can be included in the

standard MP3 information, in which the audio information is stored, and the caption information can be provided along with the audio information by synchronously outputting the caption information with the audio information using the position data and/or time data.

5 The present invention has an advantage in that there is no noise by the intervention between the caption information and the audio information since they are separated.

The present invention has an advantage in that the caption information is stored in the form of a digital signal so that the caption information can be stored in various formats such as an image, hypertexter, text, etc. and that the deterioration in sound quality by repeated reproduction is prevented.

10 Further, there is an advantage in that the file format, in which the audio and the caption are synchronized, makes searching and movement between intervals faster and easier.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a caption MP3 player format according to the present invention.

15 FIG. 2 is a view illustrating a caption MP3 data format according to the first embodiment of the present invention.

FIG. 3 is a flow chart showing a caption MP3 data reproduction method according to the first embodiment of the present invention.

20 FIG. 4 is a view illustrating the caption MP3 data format according to the second embodiment of the present invention.

FIG. 5 is a flow chart showing the method of reproducing caption information in the caption MP3 data according to the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

25 The construction and operation of the present invention will be explained in detail with reference to the accompanying drawings.

FIG. 1 is a block diagram of an MP3 player having a caption display function according to the present invention. The caption MP3 player according to the present invention comprises an input section (11), storage section (12) for storing audio information

and/or caption information, signal separation section (13) for separating the audio information and the caption information, control section (10), audio output section (16), caption output section (14) and display section (15).

The audio information and the caption information are inputted through the input section (11) from a recording medium (18) in which caption MP3 files are recorded. The input section (11) is preferably an electric circuit comprising a connection port. The audio information and the caption information inputted through the input section (11) are stored in the storage section (12), preferably a memory cell. The signal separation section (13) separates the audio information and the caption information stored in the storage section (12).

The control section (10) controls the storage of information in the storage section (12) or the output of information from the storage section (12), and synchronizes audio signals and caption signals that are separated in the signal separation section (13). Also, the control section (10) counts playing time while the audio information is being reproduced. The control section (10) is preferably a microcomputer having function of processing signals or a control circuit comprising a microcomputer, and is formed to be controlled by a user.

The audio output section (16) receives the audio signal corresponding to the audio information among the information from the signal separation section (13) and sends the signal to a left speaker (L SPK) and a right speaker (R SPK) so that the signal is outputted as an audio signal that can be heard. The caption output section (14) outputs the caption signal corresponding to the caption information among the information from the signal separation section (13) in synchronism with the audio signal outputted from the audio output section (16). The display section (15) displays the caption corresponding to the caption signal outputted from the caption output section (14) in a visible form on the screen. Preferably, the display section is a liquid crystal display (LCD).

In the caption MP3 player of the present invention having such a construction as described above, when the audio information and the caption information are inputted through the input section (11) from the caption MP3 file recorded in the recording medium (18), the audio information and the caption information are stored in the storage section (12) through

the control of the control section (10). Each information stored in the storage section (12) is outputted from the storage section (12) through the control section (10) controlled by the user when the output of information is required. The outputted information is separated into audio information and caption information through the signal separation section (13), and the separated audio signal is outputted to the speaker in the monophonic or stereophonic mode through the audio output section (16). The separated caption signal is synchronized with the audio signal and outputted on the display section (15) through the caption output section (14).

First Embodiment

A caption MP3 data format according to the first embodiment of the present invention will be described.

FIG. 2 is a view showing a caption MP3 data format according to an embodiment of the present invention. The caption MP3 information according to the present invention consists of audio information (20) and caption information (22). The audio information has a standard MP3 file format with a header, CRC, audio data and auxiliary data. The header is located on a fixed field of 32-bits and in that field, information, such as a layer, sampling frequency and remaining frame, is contained. As an option, the existence or nonexistence of CRC depends on the header. Audio data is compressed data, and the length of data depends on the kind of the data. The auxiliary data, as a user definition area, includes additional information and is variable in dimension.

Each caption information (22) comprises a start synchronization code (1), reproduction number data (2) and information data (8). It is not necessary to arrange these elements in the order as shown in FIG. 2. The arrangement shown in FIG. 2 is just an example for description.

The start synchronization code (1) of the caption information (22) means the beginning of the caption information. The reproduction number data (2) is located after the start synchronization code (1) and indicates the number for indicating to which audio information frame among a plurality of pieces of audio information (20) the caption information corresponds. It can be understood that the reproduction number is the position

data of the audio information with which the caption information should be synchronized or the position data of the caption information with which the audio data should be synchronized. The reproduction number data indicates the number, which is used for reference when the audio information (20) and the caption information (22) are reproduced, and is formed with a size of 4-bits, for example.

The information data (8) include the related information such as the address of data or the kind of data to be stored and also includes, for example, reproduction address data (3), information identification code (4), selection code (5) and caption data (6).

The reproduction address data (3) shows the reproduction number, by which the caption information is combined with each other when a plurality of pieces of caption information are in the form of one word or picture, and is formed with a size of 4-bits, for example. To form a paragraph of large amount, at least one or more pieces of the caption information are required. The information identification code (4) shows of what type a stored information file is. The file can be in the form of an image file, hypertext file (HTML) or text file, for example, which is adapted for the display device.

The selection code (5) indicates at least one of the language form used in the stored information, operation time and display mode of the display section (15). The form of the used language can be, for example, Korean (KOR), Japanese (JP), English (USA), etc., and the operation time is the time at which the caption information should be outputted. By using the operation time, the caption information is synchronized with the audio information. The display mode shows whether the caption in the form of a word or sentence is outputted on the display section (15) in sequence or at once, and determines in what form (for example, 20 columns and 4 lines or 24 columns and 2 lines) the characters should be displayed.

By using the operation time of the selection code (5), it is possible to output the caption information in synchronism with the audio information. For such synchronization, the operation time data and the reproduction number data (2) can be used together or separately.

The caption data (6) shows the caption character outputted from the MP3 recording

medium. The character stored at this time can be, for example, in the form of an image, hypertext, text, etc.

When a caption information group (22a) comprising a plurality of pieces of caption information (22) formed as such is added to an MP3 data format (20a) comprising several pieces of audio information (20) of an audio decoding unit and is outputted from the recording medium in which the MP3 audio information (20) is stored, the caption character is outputted in synchronism with each audio signal extracted from a plurality of pieces of audio information (20). The MP3 data group (20a) forms one MP3 file that for example, corresponds to a song. The caption data group (22a) includes the contents of caption corresponding to one MP3 data format (20a), and each of a plurality of pieces of caption information (22) corresponds to one word or sentence that forms the contents of the caption.

The recording medium comprises an optical recording apparatus such as a compact disc, audio tape, magnetic recording apparatus, such as a hard disc, and memory.

A plurality of pieces of audio information (20) included in the MP3 audio information (20a) each has a 32-bit header and 16-bit CRC, audio data and additional data.

Reproduction of the information having such a caption MP3 data format will be explained with reference to the flow chart of FIG. 3.

The recording medium is inserted into an apparatus reproducing the signal stored in the recording medium, e.g., the MP3 player shown in FIG. 1, and the stored information is reproduced by the control of the control circuit including a microcomputer of the reproducing apparatus.

At least one of the audio information (20) and the caption information (22) is stored in the MP3 recording medium (step 30) so that the synchronized audio signal and the caption signal are outputted for reproduction. The control circuit determines whether the audio information (20) only exists in the information stored in the recording medium (step 32).

At the determining step (32), when it is determined that the audio information (20) exists in the recording medium without the caption information (22), the audio information (20) only is outputted from the recording medium (step 34) because the caption information

(22) is not outputted and thus does not exist.

However, when it is determined that the caption information (22) exists in the recording medium, the caption signal and the audio signal are reproduced in synchronism with the caption information according to the existence and/or non-existence of the audio information (20) in the recording medium, and then the reproduction of the next caption signal or audio signal is repeated (steps 36-48).

As a first determining step, to reproduce all of the desired caption information and the audio information during the above repetition, it should be determined first whether the caption information (22) and the audio information (20) exist together in the recording medium (step 36).

At the first step (36), if it is determined that the caption information (22) exists without the audio information (20), the caption information (22) only is outputted (step 38). In the meantime, the caption information (22) exists in the first step (36) together with the audio information (22), the compressed audio information (20) is decoded for reproduction (step 40).

As a second determining step, it is determined whether the caption information (22) corresponding to the audio information (20), which is decoded at the decoding step (40) so that when the reproduction apparatus outputs an audio, a corresponding caption can be outputted (step 42). If there is no corresponding caption information, output of information is maintained by continuously outputting the already outputted caption information or a caption information having a blank character (step 44).

However, if there is caption information (22) corresponding to the audio information (20), the caption information is decoded according to the file form of the caption information, for example, image, hypertext, text, etc (step 46).

Then, the caption information is synchronized with the corresponding audio information, which is decoded at the decoding step (40), in the reproduction apparatus and outputted (step 48), and the first determining step (36) returns to output the next caption information.

For example, by the caption information (22) added to the audio information (20), the sound "beau-" and the character "beau-" synchronized with the sound "beau-" are outputted from the respective output apparatuses, i.e., the speaker from which the audio information (20) is outputted and the display device from which the caption information (22) is concurrently outputted. At this time, since the audio information (20) and the caption information (22) have a capacity capable of storing at least a part of the audio signal and the caption signal, which are to be "beau-," the audio information (20) and the corresponding caption information (22) are required to store words such as "beautiful".

In this manner, the audio information (20) stored in the caption MP3 recording medium and the caption information (22) synchronized to correspond to the audio information are simultaneously reproduced as audio and caption through the respective output apparatuses.

Second Embodiment

As shown in FIG. 4, an MP3 data format (50) according to a second embodiment of the present invention comprises a plurality of caption MP3 files (50a, 50b, . . .). Each caption MP3 file has audio information (52) and caption information (54). The audio information (52) comprises standard MPEG audio files as that in the first embodiment.

In FIG. 4, the caption information (54) comes after the audio information (52). In a different way, the caption information (54) could come before the audio information (52). However, when considering the wide utility of software for MP3 file reproduction, it is preferable to use the structure shown in FIG. 4.

In FIG. 4, one MP3 file (e.g., 50a) appears to comprise one audio information (52a) and one caption information (54a). However, that is just for simplification of the drawing. One skilled in the art could understand that substantially in the most caption MP3 files, one file comprises a plurality of pieces of audio information and a plurality of pieces of corresponding caption information. One MP3 file corresponds to one paragraph of phonetic information that is divided, for example, by a tune of song and a predetermined basis (e.g., theme).

Each of the caption information 1 and 2 (54a and 54b) comprises a caption start

synchronization signal (56), caption data 1, 2, . . . N (58a, 58b, . . . , 58n), text type (67) and caption identification code (62). The caption start synchronization signal (56), for example, as 4-byte data, indicates the start position in which the caption information is contained. The caption data (58) contains the character information to be displayed on the real screen and its size changes according to the character information. The caption data (58) will be explained hereinafter.

Text type (60) determines the type, i.e., form of text output so that for example, the character information in the caption data (58) is outputted, being formed into 20 columns and 4 lines or 24 columns and 2 lines. The caption identification code (62) is a code that identifies whether the data format is the caption MP3 file. Each of the caption data 1, 2, . . . , N (58a, 58b, . . . , 58n) is formed to include a caption display time (64), sentence start identification (66), caption (68), additional data (70), option (72) and the size of data (74).

The caption display time (64) as the time data of a point of time to display the caption is sized, for example, to be 7 bytes. The sentence start identification (66) is a code to find the beginning of the sentence when the sentence is displayed on different screens. The caption (68) is character data to be displayed on the screen, and the additional data (70) is used when an information except the option is required and contains the information that shows the form of the caption information file (image file, hypertext file, text file) or indicates the language of the caption information. The option (72) is a storage place for so-called optional matters that stores the information such as a scroll form (e.g., the character is displayed, flowing on the screen, or a previous sentence disappears slowly and the next sentence appears slowly on the same place) or a flash (e.g., flickering of letters). Into the data size (74), information on the length of the caption data is inputted.

In the caption MP3 file of such an information format, the audio information and the caption information are synchronized with each other by the caption display time (64) data. The synchronization by the use of time information is more advantageous than that by the use of the position data and has a lower rate of failure.

In the meantime, as described above, the standard MP3 file has a format comprising

a header, a CRC, audio data and additional data. It can be considered that the caption information is included in the additional data of the standard MP3 file. However, since the compression rate varies depending on the amount of the audio data, it is therefore easier to add the caption information as a separate file format as in the first and second embodiments according to the present invention than to include the caption information in the additional data. Further, there are many advantages such as the prevention of noise by the interruption occurring between the caption information and the audio information.

FIG. 5 is a flow chart showing the method of reproducing the caption information in the caption MP3 file according to the second embodiment of the present invention.

The file stored in the recording medium is opened; it is identified using the caption identification code (62) of the caption information (54) whether the caption information is in the file to be reproduced; the caption information is stored in the storage section (12) of the caption MP3 player if the caption information is included in the file and then the caption information is reproduced. When the reproduction of the caption information initiates, the caption information is initialized (step 80). At the step of initializing the caption information (80), it is determined whether to delete the caption displayed on the display device and to which file the caption data is attached. The reproduction terminates at the termination step (85). Otherwise, the playing time, which is reproduced in units of 1/1000 sec., is brought (step 86). This playing time has a value counted by the reproduction apparatus, for example, the control section (10) of the caption MP3 player shown in FIG. 1. The playing time is compared with the caption time (step 88). The caption time, as a caption display-time (64a) of the caption data (58), is the time data value of a point of time at which the caption is displayed. The next caption time data is brought (step 90) and then the caption information is outputted (step 92). After returning to the termination-of-reproduction determining step 84 (step 94), steps 86-92 are repeated.

Although the present invention has been described with reference to the drawings, it is understood that this description is not to limit the invention to the embodiments shown in the drawings but simply to explain the invention. One skilled in the art will understand that

various changes and modifications can be made from the embodiments disclosed in the specification. Therefore, the scope of the present invention should be defined by the appended claims.

CLAIMS

1. A caption MP3 player for reproducing a caption MP3 information including audio information having a standard MP3 file format comprising a header, audio data and auxiliary data, and corresponding caption information having position data and/or time data for the caption information, the caption MP3 player comprising:

a storage means for storing the inputted audio information and corresponding caption information;

a signal separation means for separating the audio information and caption information provided from the storage means;

a control means for controlling storage and output of the information through the storage means and controlling synchronization of the audio information and the caption information separated by the signal separation means; and

a caption output means for receiving an output of the signal separation means, and outputting the caption information synchronized with the audio information which corresponds to the caption signal and is outputted from the audio output means..

2. The caption MP3 player according to claim 1, wherein the caption output means is a liquid crystal display.

3. A caption MP3 data format comprising audio information having a standard MP3 file format comprising a header, audio data and auxiliary data, and corresponding caption information, wherein the caption information includes position data and/or time data, and when the audio information is reproduced, the caption information synchronized with the reproduced audio information is outputted using the position data and/or the time data.

4. The caption MP3 data format according to claim 3, wherein the caption information comprises an initiation section indicating initiation of the caption information and an information section, the position data is a reproduction number data indicating to which frame of the reproduced audio information the caption information corresponds, and the reproduction number data is included in the information section.

5. The caption MP3 data format according to claim 3, wherein the information section

comprises:

a reproduction address data for indicating a reproduction address that combines the caption information with each other if a plurality of pieces of caption information form one word or picture;

5 an information identification code for indicating a kind of files form of a stored information;

a selection code for indicating at least one of a language form used in the stored information, operation time and display mode; and

caption data including caption characters.

10 6. An MP3 data reproduction method for controlling output of audio information and/or caption information from a recording medium, the method comprising the steps of:

determining whether only audio information exists among the information stored in the recording medium;

15 outputting the audio information from the recording medium if it is determined that only the audio information exists; and

reproducing the audio information in synchronism with the caption information if it is determined that both the audio information and the caption information exist, and repeatedly reproducing next audio and caption information.

7. The MP3 data reproduction method according to claim 6, wherein the reproducing
20 step comprises the steps of :

firstly determining whether the caption information and the audio information exist together in the recording medium;

outputting the caption information if the first determining step determines that the caption information exists but the audio information does not exist;

25 decoding the audio information if the caption information and the audio information exist together at the first determining step;

secondly determining whether the caption information corresponding to the audio information exists;

outputting for the next caption information or blank caption information if the second determining step determines that the corresponding caption information does not exist;

interpreting information according to a form of a file comprising the caption information if the second determining step determines that the corresponding caption information does not exist; and

restarting the first determining step to output the corresponding caption information by synchronizing the caption information with the decoded audio information and to output the next caption information.

8. A caption MP3 data format comprising a plurality of caption MP3 files, wherein:

each caption MP3 file comprises audio information and corresponding caption information, the audio information having a standard MP3 file format including a header, audio data and auxiliary data; and

the audio information is located before the caption information in each caption MP3 file, the caption information having caption display time data for indicating a caption display time on a display when the caption information is reproduced.

9. The caption MP3 data format according to claim 8, wherein the caption information comprises:

a caption start synchronization signal for indicating a start position at which the caption information is located;

a plurality of pieces of caption information having character information to be displayed on display;

a text type for determining an output type of the character information; and

a caption identification code;

wherein the caption display time data is included in each of the plurality of caption data and is compared with a play time counted when the caption MP3 file is reproduced.

10. The caption MP3 data format according to claim 9, wherein each of the caption data comprises:

a sentence start identification code for indicating a beginning of characters presented

by the caption data;

a caption section comprising character data to be displayed on the display;

additional data containing a scroll type and flash information; and

a data size containing length information of the caption data.

- 5 11. A method of reproducing caption MP3 data comprising audio information having a standard MP3 file format comprising a header, audio data and auxiliary data, and corresponding caption information, the method comprising the steps of:

identifying step for identifying whether the caption information exists in the caption MP3 data to be reproduced;

- 10 reproducing the audio information if it is determined that the caption information does not exist at the caption information identifying step;

initializing the caption information if it is determined that the caption information exists at the caption information identifying step;

bringing a play time while reproducing the caption MP3 files;

- 15 comparing the play time with a display time of the caption information;

bringing the display time of next caption information; and

displaying the caption information.

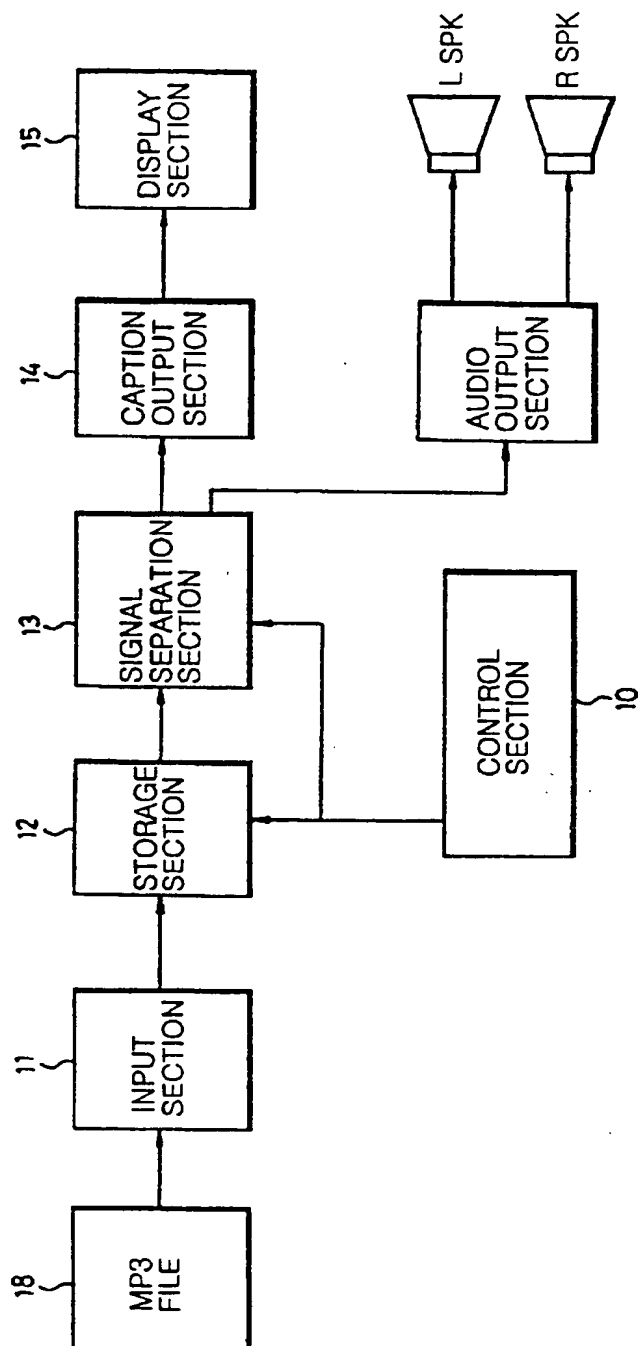
12. The caption MP3 data reproducing method according to claim 11, further comprising the steps of:

- 20 determining termination of reproduction after the audio information reproducing step; and

returning to the termination of reproduction determining step after the caption information displaying step.

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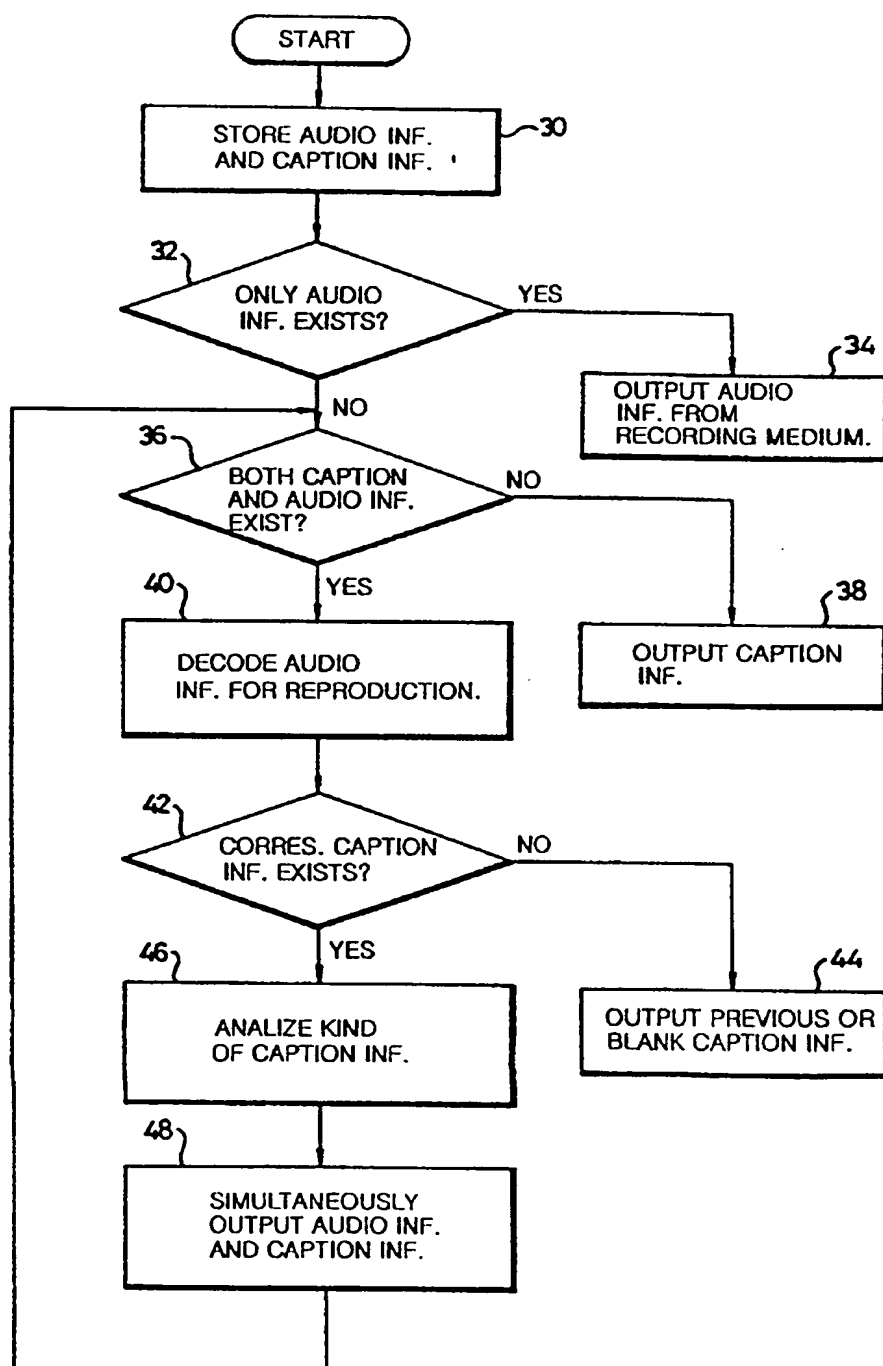
FIG.1



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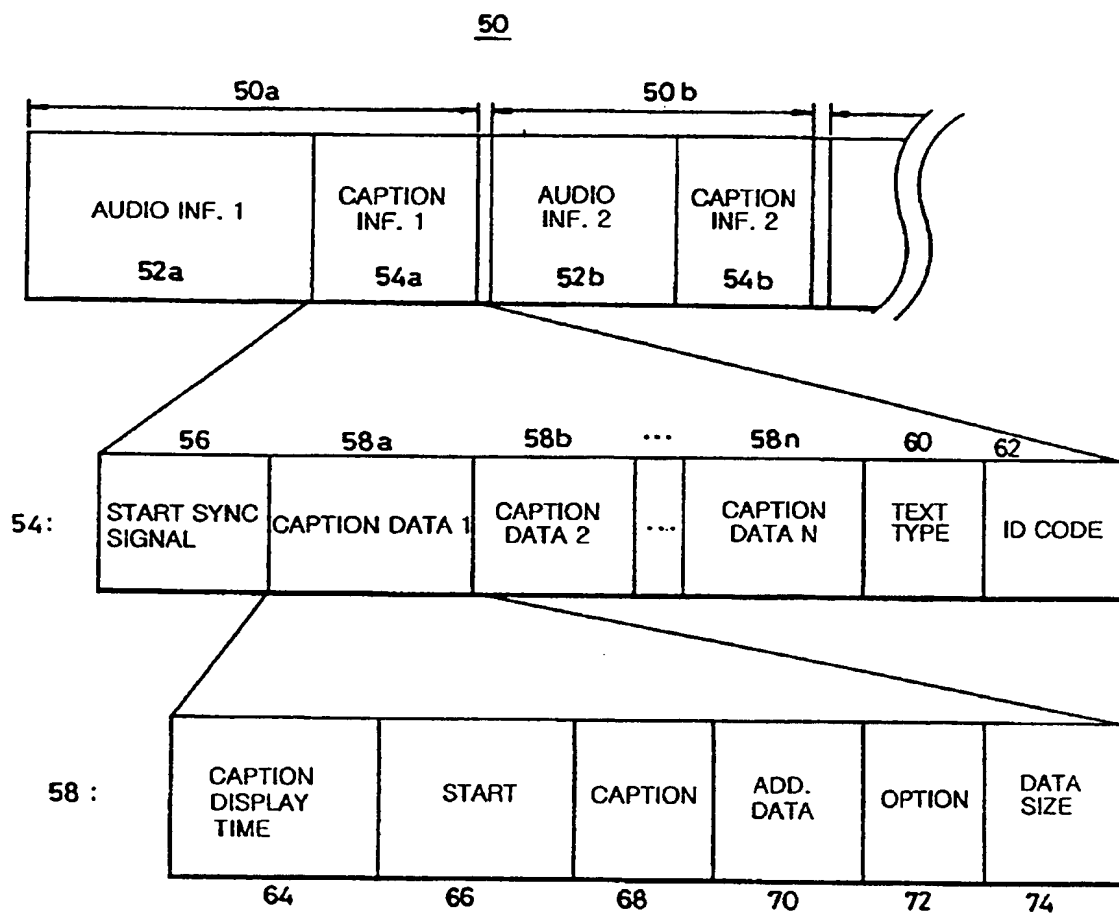
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FIG. 3



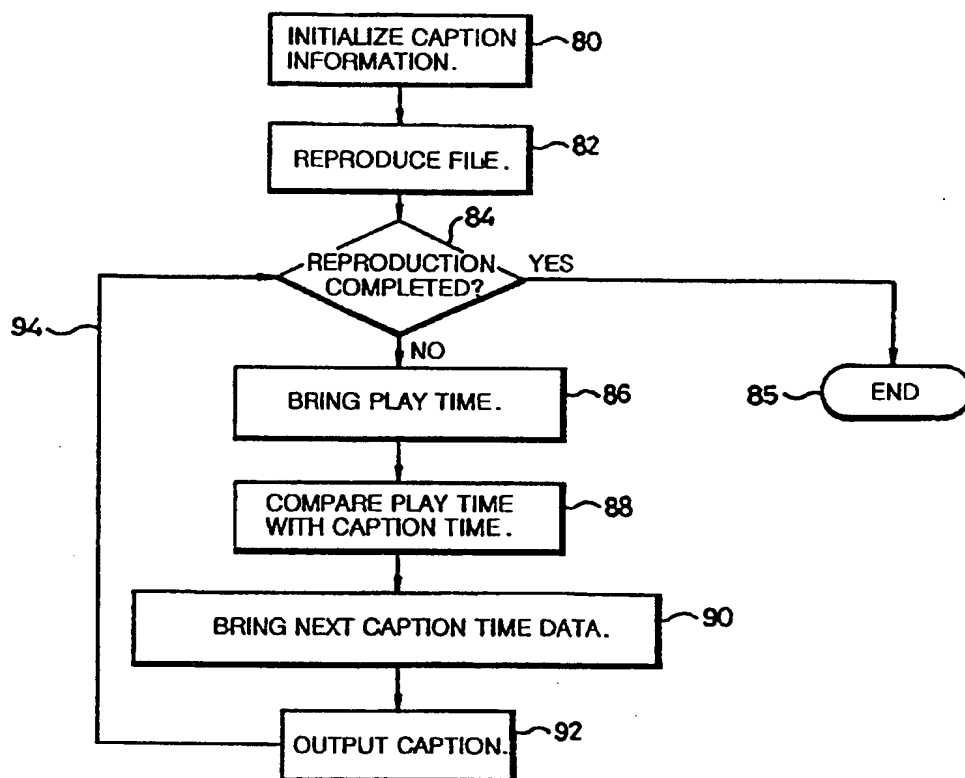
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FIG. 4



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FIG. 5



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR99/00838

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 G11B 20/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 G11B 20/04 G11B 20/00 G11B 27/00 G11B 27/34 H04B 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPI "MEMORY" "MUSIC" "AUDIO" "DATA" "PLAY" "RYLIC" "TEXT" "CAPTION"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 390 048 (MATSUSHITA) 27 MARCH 1990, Claim 1-3, Claim 4,5	1,3 4,5,7,8,9
Y	EP 0 626 689 (PIONEER) 26 MAY 1994, Claim 3-8, Claim 14-16	1,5 3,4,6-12
A	US 5,161,251 (MANKOVITZ) 3 NOVEMBER 1992	1,3-12

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

14 APRIL 2000 (14.04.2000)

Date of mailing of the international search report

25 APRIL 2000 (25.04.2000)

Name and mailing address of the ISA/KR

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